PATENT ATTORNEY DOCKET NO. 47236-0009

## IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

In re A	pplication	on of:	
Kanji OHYAMA			) Confirmation No.: 1480
Applic	ation No	.: 10/584,082	) Group Art Unit: Unassigned
Filed:	June 22	2, 2006	) Examiner: Unassigned
For:		CHANTIALES-DERIVED UNSATURAT USE OF THE SAME	TED FATTY ACID SYNTHETASE GENES
U.S. Pa Custor	itent and ner Wir	r for Patents I Trademark Office Indow Mail Stop: New Application [2] In A 22314	☑ Amendment ☐ AF ☐ Issue Fee
Sir:		INFORMATION DISCLOSU	RE STATEMENT (IDS)
the und Action	to the a dersign on the	ttention of the Examiner the documented's knowledge, this IDS is being filed	C.F.R. §§ 1.56 and 1.97(b), Applicant its listed on the attached PTO Form 1449. To display the mailing date of a first Office est Office Action on the merits after filing an opplication filing date.
is bein mailin	attention g filed a g date o	n of the Examiner the documents liste after the events recited in § 1.97(b) bu	C.F.R. §§ 1.56 and 1.97(c), Applicant brings d on the attached PTO Form 1449. This IDS t, to the undersigned's knowledge, before the llowance, or another action that closes
		The fee of \$180.00 set forth in § 1.17	(p) is included herein; or
			nformation contained in this IDS was first breign patent office in a counterpart foreign hs prior to the filing of this IDS.
	to the a	ttention of the Examiner the documen	C.F.R. §§ 1.56 and 1.97(d), Applicant ts listed on the attached PTO Form 1449
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Under 37 C.F.R. § 1.97(i): Pursuant to 37 C.F.R. §§ 1.56 and 1.97(i), Applicant brings
to the attention of the Examiner the documents listed on the attached PTO Form 1449. This IDS
is being filed after the events recited in § 1.97(d). Applicant requests that the IDS be placed in the file.
A search report or other listing of documents from a counterpart, related, or other application dated and having documents cited thereon is attached for the Examiner's consideration. Any of these documents not previously cited, and any additional documents are listed on the PTO Form 1449.
Applicant respectfully requests that the Examiner consider the listed documents and evidence that consideration by making appropriate notations on the attached form. As for any document listed on the accompanying PTO-1449 that is in a language other than English, relevance can be understood from an enclosed English abstract or at least partial translation or from mention in the specification or in a search report for a corresponding application.

This submission does not represent that a search has been made or that no better art exists and does not constitute an admission that any of the listed documents are material or constitute "prior art." If it should be determined that any of the listed documents do not constitute "prior art" under United States law, Applicant reserve the right to present to the Office the relevant facts and law regarding the appropriate status of such documents.

Applicant further reserves the right to take appropriate action to establish the patentability of the disclosed invention over the listed documents, should any of the documents be applied against the claims of the present application.

Except for issue fees payable under 37 C.F.R. § 1.18, the Commissioner is hereby authorized by this paper to charge any additional fees during the entire pendency of this Application, including fees due under 37 C.F.R. § 1.16 and 1.17 which may be required and including any required extension of time fees, or credit any overpayment to Deposit Account No. 50-0573. This paragraph is intended to be a CONSTRUCTIVE PETITION FOR EXTENSION OF TIME in accordance with 37 C.F.R. § 1.136(a)(3).

Respectfully submitted,

DRINKER, BODDLE & REATH LLP

Dated: May 15, 2007

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	Y. FUJINO, "Introduction to Lip									
/E.M./	Shuppan Center, pp. 42-46, pp. 1						,			
200000	A. YAMADA, "Experimental Mo						ntal Me	thod		
	24," Gakkai Shuppan Center, pp.									
20000000	F. DOMERGUE et al., "Cloning and functional characterization of Phaeodactylum tricornutum front-end									
, ,	desaturases involved in eicosapentaenoic acid biosynthesis," Eur. J. Biochem., 2002, Vol. 269, pp. 4105-									
	O. SAYANOVA et al., "Expressi	ion of a horage o	leseturace el	DNIA cor		NI tormino	1 cytoo	Lacano		
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5000000	Proc. Natl. Acad. Sci. USA, Apri				lang uoiw	in name	Inc too	acco,		
00000	F. GARCÍA-MAROTO et al., "C				on of the $\Delta$	6-Desatura	ase fror	n Two		
XXX	Echium Plant Species: Productio	on of GLA by He								
2002, Vol. 37, No. 4, pp. 417-426.										
XX000000	O. SAYANOVA et al., "Identific	cation of Primula	i fatty acid L	∆°-desatu	ırases with	n-3 substra	ate			
preferences <sup>1</sup> ," FEBS Letters, 2003, Vol. 542, pp. 100-104.  H. WHITNEY et al., "Functional characterisation of two cytochrome b <sub>5</sub> -fusion desaturases from										
2000000	Anemone leveillei: the unexpected							na Vol		
10000000	217, pp. 983-992.	d Identification	n a race, ac.	u 2	aturaso, i	141114, 5417	27, 20.	05, 10.		
Kooooo	Y. HUANG et al., "Cloning of Δ	.12- and Δ6-Desa	turases fron	n <i>Mortie</i>	rella alpino	and Reco	mbinar	nt		
50000	Production of γ-Linolenic Acid in Saccharomyces cerevisiae," Lipids, 1999, Vol. 34, No. 7, pp. 649-659.							49-659.		
50000	E. SAKURADANI et al., "Δ6-Fa									
fungus Gene cloning and its heterologous expression in a fungus, Aspergillus," Gene, August							ıst 6, 19	999,		
	Vol. 238, pp. 445-453.  J. NAPIER et al., "Identification of a <i>Caenorhabditis elegans</i> $\Delta^6$ -fatty-acid-desaturase by heterologous									
							eteroio	gous		
	expression in Saccharomyces cerevisiae," Biochem. J., 1998, Vol. 330, pp. 611-614.  A. REDDY et al., "Isolation of a $\Delta^6$ -desaturase gene from the cyanobacterium Synechocystis sp. Strain									
<b>V</b>	PCC 6803 by gain-of-function expression in <i>Anabaena</i> sp. Strain PCC 7120," Plant Molecular Biology									
*	1993, Vol. 27, pp. 293-300.									
Examiner /E	Elizabeth Mcelwain/		. ' '	Date Co	nsidered	06/17/201	0			
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<ul> <li>T. AKI et al., "Molecular Cloning and Functional Characterization of Rat Δ-6 Fatty Acid Desaturase," Biochemical and Biophysical Research Communications, 1999, Vol. 255, No. 3, pp. 575-579.</li> <li>H. CHO et al., "Cloning, Expression, and Nutritional Regulation of the Mammalian Δ-6 Desaturase," The Journal of Biological Chemistry, January 1, 1999, Vol. 274, No. 1, pp. 471-477.</li> <li>J. PARKER-BARNES et al., "Identification and characterization of an enzyme involved in the elongation of n-6 and n-3 polyunsaturated fatty acids," PNAS, July 18, 2000, Vol. 97, No. 15, pp. 8284-8289.</li> <li>F. BEAUDOIN et al., "Heterologous reconstitution in yeast of the polyunsaturated fatty acid biosynthetic pathway," PNAS, June 6, 2000, Vol. 97, No. 12, pp. 6421-6426.</li> <li>T. ZANK et al., "Cloning and functional characterisation of an enzyme involved in the elongation of Δ6-polyunsaturated fatty acids from the moss <i>Physcomitrella patens</i>," The Plant Journal, 2002, Vol. 31, No. 3, pp. 255-268.</li> <li>C. OH et al., "ELO2 and ELO3, Homologues of the Saccharomyces cerevisiae ELO1 Gene, Function in</li> </ul>								
<ul> <li>Fatty Acid Elongation and Are Required for Sphingolipid Formation," The Journal of Biological Chemistry, July 11, 1997, Vol. 272, No. 28, pp. 17376-17384.</li> <li>D. JAMES, JR. et al., "Directed Tagging of the Arabidopsis FATTY ACID ELONGATIONI (FAEI) Genewith the Maize Transposon Activator," The Plant Cell, March 1995, Vol. 7, pp. 309-319.</li> <li>D. KNUTZON et al., "Identification of Δ5-Desaturase from Mortierella alpina by Heterologous Expression in Bakers' Yeast and Canola," The Journal of Biological Chemistry, November 6, 1998, Vol.</li> </ul>								
<ul> <li>273, No. 45, pp. 29360-29366.</li> <li>L. MICHAELSON et al., "Functional identification of a fatty acid Δ<sup>5</sup> desaturase gene from Caenorhabditis elegans," FEBS Letters, 1998, Vol. 439, pp. 215-218.</li> <li>R. ZOLFAGHARI et al., "Fatty Acid Δ<sup>5</sup>-Desaturase mRNA is Regulated by Dietary Vitamin A and Exogenous Retinoic Acid in Liver of Adult Rats<sup>1</sup>," Archives of Biochemistry and Biophysics, July 1, 2001, Vol. 391, No. 1, pp. 8-15.</li> </ul>								
52,	52, pp.	. 3733	35-37339.		Γhe			
h So	5 5	nted benemist the Humber of Section 1997, pp.	nted by Die nemistry an e Human \( \frac{1}{2}, \text{pp. } 3732 nsidered	e Human Δ-5 Desatu 22, pp. 37335-37339. onsidered 06/17/20	ated by Dietary Vitamin A and Biophysics, Julie Human Δ-5 Desaturase," 52, pp. 37335-37339.			

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/E.M./	Very Long-chain Polyunsaturate								
	Biological Chemistry, Septembe								
	M. KAJIKAWA et al., "Function								
888	Silencing in the Liverwort Marchantia polymorpha L.," Biosci. Biotechnol. Biochem., 2003, Vol. 67,								
800	No. 3, pp. 605-612.								
000000	M. KAJIKAWA et al., "MpFAE3, a β-Ketoacyl-CoA Synthase Gene in the Liverwort Marchantia								
80000	polymorpha L., is Preferentially Involved in Elongation of Palmitic Acid to Stearic Acid," Biosci. Biotechnol. Biochem., 2003, Vol. 67, No. 8, pp. 1667-1674.								
0000	V. DEMBITSKY, "Lipids of Bry			1993, V	ol. 32, No.	3, pp. 281-	356.		
00000	T. HASHIMOTO-GOTOH et al.	, "An oligodeoxy	ribonucleot	ide-dire	cted dual a	mber meth	od for	site-	
00000	directed mutagenesis," Gene, 199	95, Vol. 152, pp. 1	271-275.						
800000	L. ZHANG et al., "Gene Expression Profiles in Normal and Cancer Cells," Science, May 23, 1997, Vol.								
000	276, pp. 1268-1272.								
000000	V. VELCULESCU et al., "Characterization of the Yeast Transcriptome," Cell, January 24, 1997, Vol. 88,								
8	pp. 243-251.  V. VELCULESCU et al., "Serial Analysis of Gene Expression," Science, October 20, 1995, Vol. 270, pp.								
X00000	484-487.								
00000	K. POLYAK et al., "A model for p53-induced apoptosis," Nature, September 18, 1997, Vol. 389, pp.								
00000	300-305.								
000000	M. FUJISAWA et al., "Isolation of X and Y Chromosome-Specific DNA Markers from a Liverwort,								
0000000	Marchantia polymorpha, by Representational Difference Analysis," Genetics, November 2001, Vol. 159								
300 300 300	pp. 981-985.  I. MITSUHARA et al., "Efficient Promoter Cassettes for Enhanced Expression of Foreign Genes in								
* 000	Dicotyledonous and Monocotyledonous Plants," Plant Cell Physiol., 1996, Vol. 37, No. 1, pp. 49-59.								
V	F. VAN ENGELEN et al., "pBIN								
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/E.M./	reductase Gene," Plant Cell Physiol., 1995, Vol. 36, No. 6, pp. 1023-1031.								
	F. BRUGLIERA et al., "Isolatio				ne corresp	onding to t	he Rt l	ocus of	
	Petunia hybrida," The Plant Journal, 1994, Vol. 5, No. 1, pp. 81-92.								
90000	G. LAZO et al., "A DNA Transi			opsis Ge	nomic Lib	rary in Agr	obacte	erium,"	
	Bio/Technology, October 1991, Vol. 9, pp. 963-967.								
	A. ABBADI et al., "Biosynthesis of Very-Long-Chain Polyunsaturated Fatty Acids in Transgenic Oilseeds: Constraints on Their Accumulation," The Plant Cell, October 2004, Vol. 16, pp. 2734-2748.								
<del></del>									
00000	B. QI et al., "Production of very long chain polyunsaturated omega-3 and omega-6 fatty acids in plants," Nature Biotechnology, June 2004, Vol. 22, No. 6, pp. 739-745.								
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